

Applicant : Rodney Thomas FOX
Serial No. : 09/720,941
Filed : June 23, 1999
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Attorney's Docket No.: 08291-
670001 / SJA/JG/50479/009

REMARKS

The foregoing amendment is intended to obviate the rejection of all of applicant's claims under 35 U.S.C. § 112.

On page 7 of the Office Action, the claims have been rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention. The basis for the examiner rejection is not understood, particularly where the examiner says that "it is unclear what is being dispersed and in what is it being dispersed." Applicant submits that the language of claim 1 makes clear that what is being dispersed is airborne droplets having a diameter of less than 10 micrometres. As far as what it is being dispersed in is concerned, the specification says that the dispersal is taking place in the atmosphere; claim 1 is being amended accordingly. Support for this amended material may be found, for example, at page 1, line 5 of the written description. Applicant is also amending claim 1 to indicate that the dispersal occurs as a result of mutual repulsion among the droplets. Support for this limitation is on page 3, lines 9-15.

REJECTIONS OVER PCT PUBLICATION WO 97/28883

Claims 1-4, 8-14 and 16 in this application stand rejected as unpatentable under 35 U.S.C. § 103(a) over WO 97/28883. Claims 1-4 and 16 have been rejected over this reference alone. Claims 8, 9 and 13 have been rejected over WO 97/28883 in view of Grawe U.S. Patent No. 5,421,897. Claims 8-10, 13 and 14 have been rejected over WO 97/28883 in view of Kulkarni U.S. Patent No. 5,191,149. And claims 11 and 12 have been rejected as obvious over WO 97/28883 in view of Kulkarni and further in view of Kalat U.S. Patent No. 4,110,427. These rejections are again respectfully traversed. Applicant will focus on the content of the primary reference and the relationship between the claims currently in this application and the disclosure of said reference.

In the amendment filed on July 3, 2003, applicant urged that when construing the claims in the instant application, the text are the preamble must be taken under consideration because both the preamble and the body of applicant's claims are necessary in order to define the subject matter of applicant's claimed invention.

WO 97/28883 is concerned with methods for precipitating airborne particles. Precipitation is caused by spraying into a domestic environment, a liquid (preferably aerosol) composition, resulting in liquid droplets being emitted. These droplets bear a unipolar charge and, as a result of mutual repulsion among the droplets, they are attracted to the airborne particles. The weight of the airborne particles is increased, thereby causing their precipitation.

In the amendment filed on the September 11, 2003, applicants amended their claims so that they now cover a method of reducing the inhalation of airborne respirable droplets only; the method does not extend to reducing inhalation of respirable particles. WO 97/28883 is directed to the precipitation of particles and uses liquid droplets as a means to increase the weight of said particles. There is no disclosure in the reference of precipitating liquid droplets. Indeed, the precipitation of liquid droplets would be contrary to the stated purpose of the disclosed invention – namely, to precipitate airborne dust particles.

For claims 8-14, the examiner's rejections are based also on one more secondary references. All of these claims are dependent on claim 1 and the added features recited in these dependent claims are not at the point of novelty of applicant's claimed invention. Since claim 1 would not have been obvious over WO 97/28883, it is believed that, likewise, these dependent claims would not have been obvious over WO 97/28883 in view of the cited secondary references.

It is noted that Claims 6 and 7 have not been rejected over WO 97/28883.

REJECTIONS OVER MALCOLM U.S. PATENT NO. 4,541,844 IN VIEW OF INCULET U.S. PATENT NO. 5,400,975

Claims 1 through 4 have been rejected as unpatentable over Malcolm U.S. Patent No. 4,541,844 in view of Inculet U.S. Patent No. 5,400,975. Claims 6-10, 13, 14 and 16 have been rejected over Malcolm in view of Inculet and further view of Kulkarni U.S. Patent No. 5,191,149. Claims 12 and 13 have not been rejected over these references.

The examiner characterizes the rejections as being new rejections. In the advisory action of July 25, 2003, the rejection of claims 1-4 over Malcolm, optionally with Inculet and Kulkarni, was withdrawn. No mention was made of the relationship of Malcolm to the other claims in the application. The rejection of claims 1-4, 6-10, 13, 14 and 16 using Malcolm as a primary reference has been reasserted.

Malcolm describes the method of agglomerating particles by electrostatic attraction, thus facilitating their removal from an air stream. Cyclonic removal is enhanced due to the effective increase in particle size. Electrostatic removal is enhanced if the charged agglomerates are subjected to an electric field. In particular, Malcolm teaches electrostatically charging a water-based aerosol by induction, a process requiring the use of high voltage. The charged aerosol is used primarily to attract smaller airborne particles less than 20 microns in diameter, thus inducing agglomeration. This in turn leads to improved removal by cyclonic action – column 2, line 46-56. Thus, Malcolm relies specifically on dielectrophoretic processes to enhance particle collection; this is borne out in the title of the patent.

In contrast, applicant's invention is concerned with reducing the inhalation of airborne respirable droplets, having a diameter of less than 10 micrometres, by imparting a unipolar charge to the droplets, whereby these droplets deposit into the vicinity of mouth, nose or upper respiratory tract, rather than entering the lungs. The charging system used in applicant's invention is a passive charging system and there is no requirement for any agglomeration of particles to occur. Indeed, as pointed above in

connection with WO 97/28883, applicant's claims are no longer concerned with inhalation of particles.

Claim 1 also requires that the charge imparted to said droplets arises solely by interaction between the liquid and the spray device, without any charge being imparted thereto from an internal or external charge-inducing device. This is clearly contrary to what Malcolm teaches because, as conceded by the examiner, Malcolm "is directed to charging with an external voltage source." The Inculet reference is used as secondary reference to supply what is not disclosed in Malcolm '844. The requirement in Claim 1 that the charge be imparted solely by interaction between the liquid and the spray device was, in previous prosecution, added to overcome the Malcolm reference. However, it also overcomes the applicable portions of Inculet. In the Office Action herein responded to, the examiner says:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an aerosol device with an actuator to dispense Malcolm's liquid droplets. One would be motivated to do so since Inculet teaches an aerosol spray device containing an actuator with piezo-electric assembly that dispenses an electrostatic charge. Since the critical feature in Malcolm's particle collection is electrically charging the liquid droplets and Inculet teaches electrically the liquid droplets in the device to enhance attraction to another oppositely charged body, one would expect similar results. Further, Malcolm suggests the use of other methods to electrically charge the droplets such as piezo-electric nozzle, which is taught by Inculet.

The examiner characterizes the primary reference as disclosing a method to "collect particulates." This is a reasonable interpretation of what Malcolm discloses but, applicant's claimed methods do not "collect particulates" as disclosed by Malcolm because applicants are not seeking to remove particulates already present in the atmosphere.

Applicants are preventing inhalation of small droplets which are coming out of an aerosol spray device. Inculet teaches an aerosol spray device that dispenses electrostatically charged particles. However, the particles are charged by separate charge-inducing means and not solely – as now required applicants' claims – by

interaction between the liquid and the aerosol device. Specifically, Inculet teaches electrostatic charging by corona discharge (column 1, line 34), by induction charging (column 1, line 51), by application of high voltage (column 2, line 44) and by a piezo-electric crystal incorporated in the actuator (column 3, line 23). The first three methods are described as prior art; the fourth method is the Inculet invention. The electrostatic charging methods taught by Inculet involve imparting a charge from either an internal or an external charge-inducing device. This is contrary to the negative limitation now incorporated into all of the applicant's claims. In the circumstances, the rejections over Malcolm in view of Inculet should be withdrawn.

With respect to the rejections of claims 6-10, 13, 14 and 16, the examiner uses Kulkarni as additional secondary reference. However, the features recited in these claims relate to additional characteristics that are not at the point of novelty of applicant's claims. In view of the fact that claims 1-4 are not properly rejectable over Malcolm in view of Inculet, likewise the rejection of claims 6-10, 13, 14 and 16 using Kulkarni as additional secondary reference is not valid.

CONCLUSION

In view of the foregoing amendment and these remarks, it is believed that all claims now in this application are in condition for allowance. Favorable action is therefore requested.

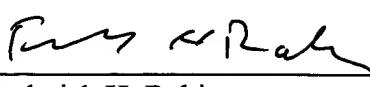
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Respectfully submitted,

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